Advanced Computer Architecture

Programme course

6 credits

Datorarkitektur

TDTS08

Valid from: 2017 Spring semester

Determined by

Board of Studies for Computer Science
and Media Technology

Date determined

2017-01-25

Main field of study

Computer Science and Engineering, Electrical Engineering

Course level

Second cycle

Advancement level

A1X

Course offered for

- Computer Science, Master's Programme
- Computer Science and Engineering, M Sc in Engineering
- Information Technology, M Sc in Engineering
- Applied Physics and Electrical Engineering - International, M Sc in Engineering
- Applied Physics and Electrical Engineering, M Sc in Engineering
- Electronics Engineering, Master's programme

Entry requirements

Note: Admission requirements for non-programme students usually also include admission requirements for the programme and threshold requirements for progression within the programme, or corresponding.

Prerequisites

Computer Hardware and Architecture

Intended learning outcomes

The aim of the course is to present how modern computer systems work and are built. The students should learn the advanced concepts and principle of computer architecture and organization, as well as methods developed in order to improve the performance of current microprocessors and parallel systems. The students, when finishing the course, should be able to analyze a computer to extract its basic architectural features, and understand how its components work together to accomplish the computation tasks efficiently.

Course content

Instruction set, memory management and hierarchy, input/output and buses, pipelining techniques, branch prediction, RISC architectures, VLIW architectures and specific compiling techniques, superscalar architectures, out of order execution, parallel architectures and multiprocessors.

Teaching and working methods

The course is organized as a set of lectures and laboratory exercises.

Examination

| LAB1 | Laboratory work | 2 credits | U, G |
| TEN1 | Written examination | 4 credits | U, 3, 4, 5 |

Grades

Four-grade scale, LiU, U, 3, 4, 5

Department

Institutionen för datavetenskap

Director of Studies or equivalent

Ahmed Rezine

Examiner

Zebo Peng

Course website and other links

Education components

Preliminary scheduled hours: 48 h
Recommended self-study hours: 112 h

Course literature

Additional literature

Books

A list of recommended literature will be available in the course information.

Common rules

Regulations (apply to LiU in its entirety)

The university is a government agency whose operations are regulated by legislation and ordinances, which include the Higher Education Act and the Higher Education Ordinance. In addition to legislation and ordinances, operations are subject to several policy documents. The Linköping University rule book collects currently valid decisions of a regulatory nature taken by the university board, the vice-chancellor and faculty/department boards.

LiU's rule book for education at first-cycle and second-cycle levels is available at http://styrdokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.